

2.5 Algebra Properties: Pg ~~105~~ ~~107~~ NOTES

Algebraic Properties of Equality:

Addition: If $a=b$ then: $a+c=b+c$

Subtraction:

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$$a-c=b-c$$

Multiplication:

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$$ac=bc$$

Division:

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$$\frac{a}{c}=\frac{b}{c} \quad (c \neq 0)$$

Substitution

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- a can be substituted for b in any equation or expression.

Distributive Property: $a(b+c)=ab+ac$, where $a, b, c \in \mathbb{R}$

Reflexive Property of Equality:

Real Numbers: For any real number a , $a=a$.

Segment Length: For any segment AB , $AB=AB$

Angle Measure: For any angle A , $m\angle A=m\angle A$

Symmetric Property of Equality:

Real Numbers: For any real numbers a & b , if $a=b$, then $b=a$

Segment Length: For any segments AB & CD , if $AB=CD$, then $CD=AB$.

Angle Measure: For any angles A & B , if $m\angle A=m\angle B$, then $m\angle B=m\angle A$.

Transitive Property of Equality:

Real Numbers: For any real numbers a, b , & c , if $a=b$ & $b=c$, then $a=c$

Segment Length: For any segments AB, CD , & EF , if $AB=CD$ & $CD=EF$, then $AB=EF$

Angle Measure: For any angles A, B , & C , if $m\angle A=m\angle B$ & $m\angle B=m\angle C$, then $m\angle A=m\angle C$.

Example:

1) $2x+5=20-3x$

2. $2x+5(+3x)=20-3x+3x$

3. $5x+5=20$

4. $5x+5-5=20-5$

5. $5x=15$

6. $5x/5=15/5$

7. $x=3$

1. Given

2. Add. prop. of =

3. Simplify (combine like terms)

4. Subtraction prop. =

5. Simplify

6. \div prop. of =

7. Simplify